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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/055,490 04/06/98 DENT

P 1280.00020

EXAMINER

WM02/0228

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AND MORTIMER  
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CHICAGO IL 60661

NGUYEN, S

ART UNIT

PAPER NUMBER

2664

DATE MAILED:

02/28/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

# Office Action Summary

Application

09/055,490

Applicant(s)

d

Examiner

Steven HD Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 03 January 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) 40-53 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 and 24-39 is/are rejected.
- 7) ☒ Claim(s) 23 is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

## Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2, 4, 5
- 18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Restriction*

1. In response to the restriction filed 12/8/2000. The applicant selects Group I.

### *Information Disclosure Statement*

2. The information disclosure statement filed 3/22/2000 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-9, 12, 13, 27, 29-32 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benedicto Ruiz (USP 5648784) in view of Thompson (USP 5134417).

As claims 1, 3-4, 9, 12, 27, 30-31 and 34, Benedicto Ruiz discloses a TDMA transmitter including plurality of beamformers which received a steering control signals (Fig 7, Ref BFNn are beamformer network which received a control signals from a Ref OBS for adjusting the phase of beam); a plurality of passive couplers (Fig 7, Ref MBs are butler matrices); antenna with aperture two dimension (Fig 7, antennas A1-Ap); see col 6, lines 62 to col 8, lines 11. However, Benedicto Ruiz does not disclose a butler matrix outputting a multiple beams having a phase relationship. In the same field of endeavor, Thompson discloses a butler matrix which outputs a multiple beams having a phase relationship by

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splitting the signals via the couplers (Fig 1 and 3-5 wherein the relationship of outputting beam 0, 45, 90, 135 degree etc....).

Therefore, it would have been obvious to one of the ordinary skill in the art at the time of invention was made to apply a butler matrix which have 4 x 4 or 8 x 8 port, outputs a multiple beams having a phased relationship as disclosed Thompson into Benedicto Ruiz's system. Even without, Thompson's teaching, one of ordinary skill in the art would have recognized that the output beams of butler matrix have a phased relationship. The motivation/suggestion would have been to reduce the interference between the channels.

As claim 2, 7-8, 13, 29 and 32, Benedicto Ruiz discloses a plurality of power amplifiers being operated at saturation (Fig 7, Ref HPA1).

As claims 5-6, Benedicto Ruiz discloses n, p and l being equal (See Fig 6 wherein n, hpa and a are equal).

5. Claims 10-11 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benedicto Ruiz and Thompson as applied to claims 1 and 27 above, and further in view of Natarajan (USP 5790070).

As claims 10-11 and 33, Benedicto Ruiz does not disclose the claimed invention. In the same field of endeavor, Natarajan discloses a steering control signal which steers the time slot according to the position of the user and a scheduler for scheduling the data packets for transmitting to the users (col 4, lines 65-68 wherein steering control signals are used to steer the beams according to the time slot assigned for each user).

Therefore, it would have been obvious to one of the ordinary skill in the art at the time of invention was made to apply a steering the beam to the assigned time slot and scheduling the data packets for transmitting to the user as disclosed by Natarajan into Benedicto Ruiz's system. The motivation or suggestion would have been to prevent the interference between the signals.

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6. Claims 28 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benedicto Ruiz and Thompson as applied to claims 27 and 34 above, and further in view of Kamin (USP 5825762).

Benedicto Ruiz and Thompson do not disclose a router for routing the receiving signals to the corresponded antenna service region. However, in the same field of endeavor, Kamin discloses a router for routing the received signals to the corresponded antenna service region (Fig 3, Ref 308).

Therefore, it would have been obvious to one of the ordinary skill in the art at the time of invention was made to apply a router for routing the received signals to correspond region via antenna as disclosed by Kamin into Benedicto Ruiz and Thompson. Even without Kamin's teaching, one of ordinary skill in the art would have recognize a step of apply a router for routing the received signals to the corresponding beamformer.

7. Claims 14-22 and 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roederer (USP 5115248) in view of the admitted prior art.

As claims 14-22 and 25-26, Roederer discloses a beam former network (Fig 7b, Ref 5) including a plurality of beamformer for receiving a plurality of dual polarization signals (See col 1, lines 39-40 and Fig 23), a plurality of power amplifiers (Fig 7b, Ref 4), a plurality of butler matrices (Fig 7b, Ref 3 and Fig 4a) for receiving first and second polarization beams and outputting the first and second polarization beams having a phased relationship by splitting across the coupler with phase increment (Fig 4b) and plurality of antenna (Fig 7b, Ref 2). However, Roederer does not disclose a first and second steering control signals. In the same field of endeavor, The admitted prior art, in fig 3, discloses a dual beamformer receiving first and second steering control signals being vary with each time slot, first and second polarization signals for determining a direction of transmission of directive beams and a dual polarization antenna.

Since, Roederer suggest a beamformer network receiving a control signal to adjust the position of the beam. Therefore, it would have been obvious to one of the ordinary skill in the art at the time of

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invention was made to apply a dual beamformer as disclosed by the admitted prior art into Roederer's multibeam feed device. The suggest/motivation would have been to reduce the amplitude ripple between the beams.

8. Claims 36-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benedicto Ruiz (USP 5648784) in view of Nomoto (USP 5258767).

Benedicto Ruiz discloses a method of providing a plurality of groups of directional transmitting beams wherein each of group of directional transmitting beams associated with a fan beam (Fig 6a, each beam which is formed by BFN, transmits to each antenna); providing a plurality of communication signals each intended for user terminal; determining the group of directional transmitting beam to use for transmitting a communication signal to respective user; multiplexing the plurality of communication signals on respective groups of directional transmitting beams associated with the respective destined user terminal for transmitting to the destination user (col 5, lines 4-11, the communication signals "p1, p<sup>2</sup> and p3" are multiplexed into a group of directional transmitting beam "B1, B2 and B3" of a fan beam B) and each multiplexed beam into a butler matrix (Fig 6a, MB). However, Benedicto Ruiz does not disclose fan beams having a first axis and each of fans has a length along a second axis which perpendicular to the first axis. In the same field of endeavor, Monte discloses a fan beams having a first axis and each of fan has a length along a second axis which perpendicular to the first axis (See Fig 11).

Therefore, it would have been obvious to one of the ordinary skill in the art at the time of invention was made to apply a fan beams fan beams having a first axis and each of fan has a length along a second axis which perpendicular to the first axis as disclosed by Nomoto into Benedicto Ruiz's communication system. The motivation would have been to reduce the interference between the beams.

9. Claims 38-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gross (USP 5977907) in view of Wang (USP 5563606).

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Gross discloses an orbit satellite (Fig 1, Ref 200 and col 3, lines 10) in a non-geostationary orbit defined a ground track. The orbit satellite has a multibeam transmitter (Fig 7, Ref 720) simultaneously creating a plurality of directional transmitting beams having a right or left angle and being steerable beam (col 2, lines 60-64 and Fig 7, Ref 740) via an electronic steering signal which is generated based on the destination of user terminals of receiving beams to transmit to plurality of user terminal (Fig 1, Ref 105, 115, 125 and 135 are a plurality of subscribers for receiving a communication beam from a satellite). The orbit satellite has a multibeam receiver (Fig 7, 730) for receiving signals from user terminals (Fig 1, Ref 105, 115, 125 and 135 are a plurality of subscribers for transmitting signals to satellite 200); See Fig 5 and col 4, line 39-65. However, Gross does not disclose a step of mapping a destination location identifier signal to determine a directional transmitting beam to a respective destination terminal. In the same field of endeavor, Wang discloses a step of mapping a destination location identifier signal to determine a directional transmitting beam to a respective destination terminal (See Fig 8, Ref 110 and 116).

Since, Gross suggests the use of angle for determining a direction of the subscribers for generating a steering signals. Therefor, it would have been obvious to one of the ordinary skill in the art at the time of invention was made to apply a step of mapping a destination location identifier signal to determine a directional transmitting beam to a respective destination terminal as disclosed by Wang into Gross's communication system. Even without Wang's teaching, one of ordinary skill in the art would have been to recognize a step of using a destination location identifier of user terminal to map a signal to antenna beam being well known and expected in the art.

*Allowable Subject Matter*

10. Claim 23 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

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The prior arts do not disclose a scheduler receiving the TDMA signals and varying first and second steering signals to avoid adjacent beams having the same polarization during the same time slot.

### *Response to Arguments*

11. Applicant's arguments filed 12/8/2000 have been fully considered but they are not persuasive.

The applicant states that Group I, II and III are closely related together. In reply, Group I, II and III are belong to three different classes and drew into a different invention such as group I claims a structure of a transmitter for transmitting the information. Group II claims a detail of a scheduler for scheduling/ selecting the data packets for transmitting to the destination user. Group III claims a method of preventing an unauthorized user to access the network. The subjects of these groups are very distinct from each other. Therefore, the restriction is properly and must be remain~~ed~~.

### *Conclusion*

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ozaki (USP 5373299) discloses a butler matrix for receiving m signals and output m beams having a phased relationship.

Locke (USP 5812089) discloses a method of using m beamformer matrix for multiplexing a plurality of signal into a beam.

Lo Porti (USP 5548295) discloses a plurality of beamformers coupling to a plurality of power amplifiers which couple to a plurality of couplers "butler matrix" to established a fan beam having a phased relationship.

Brookner (USP 6104343) discloses an array antenna having multiple independent steered beams.

Turcotte (USP 5754139) discloses a beamformer network with a steering control unit for steering the beam according to traffic demand.



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Frazita (USP 4837580) discloses a beamformer network which receives a beam steering control signal couple to a power amplifier network being connected to a switch network having antenna arrays.

Lenormand (USP 5734349) discloses a beamformer network couple to a power amplifier network being connected to a switch network having antenna arrays.

Tresselt (USP 4837580) discloses a beamformer network, which receives a beam steering control signal couple to a switch network having antenna arrays.

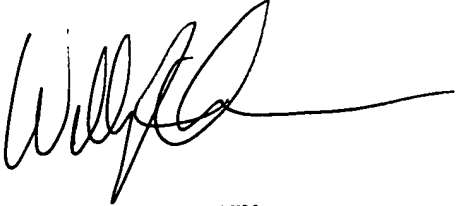
Roger (EPO 474977 A2) discloses a beamformer network that receives a beam steering control signal couple to a switch network having antenna arrays.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven HD Nguyen whose telephone number is (703) 308-8848. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Wellington can be reached on 703-305-3466. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3988 for regular communications and (703) 305-3988 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

Steven Nguyen  
February 20, 2001



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